

CLAIMS:

1. A device for the redundant voltage supply of safety-relevant systems, in particular in motor vehicles, having:

at least one first drive device (1), one second drive device (2) and one third drive device (3), each of these drive devices being designed to drive relays in a relay unit (4) for switching over voltage supplies of safety-relevant systems (5), characterized in that

the drive devices (1, 2, 3) are connected to a communication channel (11),

the first and second drive devices (1, 2) each have a device for monitoring a voltage applied to the safety-relevant systems (5),

the first drive device (1) can trigger a switching process of the relay unit (4) and output a request message (Anf1) to the communication channel (11) if the device for monitoring a voltage applied to the safety-relevant systems (5) detects that no voltage is applied;

the second drive device (2) has a device for checking whether the first drive device has driven and switched the relay unit (4), and, if the device for checking determines that the first drive device has not driven or has switched the relay unit, and the device for monitoring a voltage applied to the safety-relevant systems (5) detects that no voltage is applied, said second drive device can trigger a switching process of the relay unit (4) and, if it is not possible to trigger a switching process of the relay unit (4), can output a further request message (Anf2) to the communication channel (11),

and

the third drive device (3) can receive from the communication channel (11) the request messages (Anf1, Anf2) from the first and second drive devices (1, 2) and can trigger a switching process of the relay unit (4) when both request messages (Anf1, Anf2) are received.

2. The device as claimed in claim 1, characterized in that
another unit for switching over voltages can also be used in place of the relay unit (4) having relays.

3. The device as claimed in claim 1 or 2, characterized in that
the communication channel (11) is a CAN bus.

4. A method for the redundant voltage supply of safety-relevant systems, in particular in motor vehicles, characterized by the steps:

(S1) a first drive device (1) monitors via a first line (Sp1) whether a voltage can be detected across one or more safety-relevant systems (5); return to the start if this is the case;

(S2) if it is determined in step S1 that no voltage is applied to one or more safety-relevant systems (5), the first drive device (1) drives a relay unit (4) by means of a first control signal (St1) so that a voltage is again applied to the safety-relevant system or systems (5);

(S3) the first drive device (1) outputs to a communication channel (11) a first request message (Anf1) which states that it is necessary to switch over at least one relay of the relay unit (4) in order to supply voltage;

(S4) the second drive device (2) receives the first request message (Anf1);

(S5) the second drive device (2) checks whether the first drive device (1) has successfully driven/switched over the relay unit (4); return to the start if this is the case;

(S6) the second drive device (2) determines via a second line (Sp2) whether a voltage is applied to one or more safety-relevant systems (5); return to the start in the affirmative;

(S7) check whether it is possible for the second drive unit (2) to drive/switch the relay unit (4) in the negative case;

(S8) the second drive device (2) drives/switches the relay unit (4) by means of a second control signal (St2) if driving/switching is judged to be possible in step S7, then return to the start;

(S9) the second drive device (2) outputs a second request message (Anf2) to the communication channel (11) if it is not possible for the second drive device (2) to drive/switch the relay unit (4) for whatever reasons, for example due to an interruption in the line for the second control signal;

(S10) the third drive device (3) receives the second request message (Anf2) from the second drive device (2) together with the first request message (Anf1) from the first drive device (1);

(S11) the third drive device (3) drives/switches the relay unit (4) by means of a third control signal (St3); then return to the start.